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<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,372	KATO ET AL.	
	Examiner	Art Unit	
	Sara Addisu	3722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 3/23/06.
2.  The allowed claim(s) is/are 1-6.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some\*    c)  None    of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

## DETAILED ACTION

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

A hale-machining method and apparatus achieves an easy preparation of an NC machining program and performs a high geometrical accuracy in a predetermined three-dimensional free curved surface. A haling tool (34) is set on a tool holder (32) in such a manner that a cutting point (P) of the haling tool (34) is substantially coincided with an intersection of a first rotating axis (B,) a second rotating axis (A) and a third rotating axis (C). A rotary table (16) and a rotary base (24) are rotated in such a manner that a tool axis direction of the haling tool is substantially coincided with a normal direction of the machined surface. A tool holder 3(2) is rotated in such that a front rake surface of the haling tool (34) is substantially directed in perpendicular to a feeding direction of the haling tool. A workpiece table holding a workpiece and the tool holder are relatively moved along a machined surface of the workpiece in three perpendicular axes including an axis parallel to the first rotating axis.

***Allowable Subject Matter***

Claims 1-6 are allowed.

Regarding independent Claims 1 and 3: The closest prior art to the instant invention is Muller (USP 4,833,764). MULLER teaches mounting a rotary table (36) rotatably around a first rotating axis (C) by a first rotary driving device, mounting a rotary base (50) on said rotary table (36) rotatably around a second rotating axis (B<sub>1</sub>: which is perpendicular to C axis) by a second rotary driving device, mounting a tool holder (54<sub>1</sub>) on said rotary base (50) rotatably around a third rotating axis (axis being perpendicular to both the first and second rotating axis) by a third rotary driving device ('764, figure 1). MULLER also teaches setting a tool (56<sub>1</sub>) on said tool holder (54<sub>1</sub>). MULLER teaches that the existence and disposition of the translational axis W (i.e. the tool holder is straightly moved) allows the tool to be positioned such that its point of contact P with the workpiece (i.e. the machining point of the tool) is movable into the rotational axis B of the rotatable tool table 50 (i.e. the cutting point of the tool substantially coincides with the second rotational axis, B<sub>1</sub>-axis as well as the third rotational axis) ('764, Figure 3 & Col. 6, lines 29-39). MULLER also teaches a machine tool having three straight moving devices: a Y-axis moving unit (that is parallel to the first rotating axis (C)), a V- axis (redefined a Z-axis) moving unit and an X-axis moving unit to provide relative

movements between a tool holders (54<sub>1</sub>) and a workpiece (46) ('764, figure 1). The rotary table (36) is mounted on the Y-axis moving unit as shown in figure 1). The V- axis (redefined a Z-axis) and X-axis moving units move worktabe bed (8). MULLER also teaches carriage (32) (and consequently tool 56<sub>1</sub>) moving in a Z direction. Furthermore, MULLER teaches machine tool having linear main axes (X, Y and Z) rotational axes (A to C), and the additional linear movement axes (U, V and W) are all program-controlled and permit the possibility of program-controlled machining of workpieces of arbitrary shape without remounting of workpieces, starting from a blank and ending with a finished end product. ('764, Col. 6, lines 12-19). However, the prior art of record, MULLER, fail to anticipate or make obvious the cutting point of the tool substantially coinciding with the first rotational axis C (in addition to the second and third rotational axis, as mentioned above).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica Carter can be reached on (571) 272-4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SA  
5/10/06

Monica S. Carter  
MONICA CARTER  
SUPERVISORY PATENT EXAMINER